

REMARKS

In this Amendment, Applicant cancelled Claim 3 without prejudice or disclaimer and amended Claim 1 to overcome the rejections and further specify the embodiments of the present invention. The support for the amendments to the claims can be found throughout the specification, for example, paragraph [0004] of published specification, which describes the present invention to remedy the problem of "wet" method described in paragraph [0003]. In [0004], it is mentioned that the present invention aims to overcome all limitations of the wet process for modifying clays which at no point uses conventional solvent. By a conventional solvent, it is clear to a person of ordinary skill in the art that a polar solvent used in the state of the art and described in the introduction of the specification in [0003] as: "polar solvents such as water or alcohol such as methanol.." It is respectfully submitted that no new matter has been introduced by the amended claim. All claims are now present for examination and favorable reconsideration is respectfully requested in view of the preceding amendments and the following comments.

REJECTIONS UNDER 35 U.S.C. § 112 SECOND PARAGRAPH:

Claim 3 has been rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is respectfully submitted that the currently presented amendments clearly point out and define the embodiment of the present invention. More specifically, Claim 3 has been cancelled with prejudice or disclaimer. Therefore, the rejection under 35 U.S.C. § 112, second paragraph, has been overcome. Accordingly, withdrawal of the rejections under 35 U.S.C. § 112, second paragraph, is respectfully requested.

REJECTIONS UNDER 35 U.S.C. § 103:

Claims 1 – 4 and 9 have been rejected under 35 U.S.C. § 103 as allegedly being unpatentable over JP 11092132 to Wada et al. and in view of US 6,821,464 to Okamoto.

Claim 5 has been rejected under 35 U.S.C. § 103 as allegedly being unpatentable over JP 11092132 to Wada et al. in view of US 6,821,464 to Okamoto, further in view of US 2,761,835 to Brown. Claim 6 has been rejected under 35 U.S.C. § 103 as allegedly being unpatentable over JP 11092132 to Wada et al. in view of US 6,821,464 to Okamoto, further in view of US 2002/0018951 to Livengood. Claim 7 has been rejected under 35 U.S.C. § 103 as allegedly being unpatentable over JP 11092132 to Wada et al. in view of US 6,821,464 to Okamoto, further in view of US 5,069,994 to Gitzel et al. Claim 8 has been rejected under 35 U.S.C. § 103 as allegedly being unpatentable over JP 11092132 to Wada et al. in view of US 6,821,464 to Okamoto, further in view of US 5,728,764 to Bauer et al. Claim 10 has been rejected under 35 U.S.C. § 103 as allegedly being unpatentable over JP 11092132 to Wada et al. in view of US 6,821,464 to Okamoto, further in view of US 5,654,347 to Khemani et al.

Applicant traverses the rejection and respectfully submits that the embodiments of present-claimed invention are not obvious over the cited references. Claim 1 has been amended to “consist of the step of” and polar solvents have been excluded.

Applicant directs Examiner’s attention to difference between our dry process and the wet process of Wada even if combined with Okamoto for the use of other polar solvents such as methanol, ethanol, isopropanol and the like. Applicant has described such wet process with water or polar solvent in the introduction of the specification {[0003] on page 1 of US 2006/0140842} with all its problems.

Claim 1 has been amended to define “consisting of the step of” to highlight that the montmorillonite type clay is mixed with an organomodifier selected from ...in a presence of carbon dioxide (CO₂) under pressure and wherein polar solvents including water and alcohols are absent”. See [0005] on page 1 of US 2006/0140842.

The claimed process or mixture under CO₂ under pressure represents one step and not two separate steps such as Wada. CO₂ under pressure is used in the present invention to prepare the organomodified clay. In Wada, the first step is an organomodification of the clay with quaternary ammonium salt in WATER to obtain an organomodified clay

WITHOUT CO₂. Then, in a second step, Wada uses CO₂ under pressure to carry a guess compound into the “resultant laminar compound” or organomodified clay. The guess compound is not an organomodyfing compound such as quarterly ammonium but an organic compound with a predetermined function {Wada§006} such as 4-phenylazo aniline, a rhodamine, a Supiro pyran and an azobenzene {Wada§0010}

On the contrary, in the present invention, wherein water or other polar solvent is totally absent and wherein there is no need to have a polar solvent; it is CO₂ which plays the role of solvent (see p2 §21 last sentence in US2006:0140842) in a first step. Quaterly ammonium salt (in solid state) and montmorillonite react in carbon dioxide under pressure to become an organomodified clay. There is no addition of guess molecule with CO₂ under pressure.

Claims 6 – 8 and 10 includes the features not disclosed by prior arts, including Wada, by their dependency on Claim 1.

In addition, Applicant respectfully submits that the process to organomodify a clay with an organomodifying compound such as quaternary ammonium requires water to be intimately mixed with the clay. However, this solvent strongly limits the ranger of organo-modifiers which have to be soluble in water (generally quaternary ammonium salts). In order to enlarge the variety of organo-modifiers, supercritical CO₂ was tested. Indeed, phosphonium salt, highly florinated ammonium salt and siliconated ammonium salts are highly soluble in supercritical CO₂ and poorly soluble in water. Nevertheless, with these salts, the cationic exchange between the clay layers is not possible in water and was not expected in supercritical CO₂ either.

However, Applicant has surprisingly found that it was possible to use supercritical CO₂ for all organomodifiers of clay and this was not disclosed, taught, or suggested in prior art, including Wada, Brown, etc.

In summary, there is no motivation to combine Wada with other references. Even if they are combined, they will not render the present claimed invention obvious. One of

ordinary skill in the art would not discern the present invention as claimed at the time of its invention.

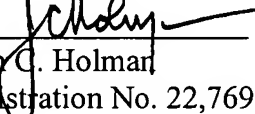
Therefore, the newly presented claims are not obvious over cited references and the rejection under 35 U.S.C. § 103 has been overcome. Accordingly, withdrawal of the rejections under 35 U.S.C. § 103 is respectfully requested.

Having overcome all outstanding grounds of rejection, the application is now in condition for allowance, and prompt action toward that end is respectfully solicited.

Respectfully submitted,

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